CERCETĂRI CU PRIVIRE LA INTERACŢIUNEA DINTRE SUPRAFAŢA FOLIARĂ ŞI RECOLTA AGRIŞULUI

RESEARCH ON THE INTERACTION BETWEEN LEAF AREA AND GOOSEBERRY HARVEST

Parascovia Sava**,** IP Scientific and Practical Institute of Horticulture
and Food Technologies, Chisinau, 14, str. Costiujeni, MD-2019,
Republic of Moldova, tel. 00 373 69801776

Abstract

The paper presents results of research carried out to reduce the surface area reduction causes individual foliar nutrition and harvest, but the recalculation on a unit area of plantation this indicator increased while increasing the number of plants per hectare, giving maximum values of all gooseberry varieties, studied the planting distance 2.5 x 0.75 m. Leaf area and average yield in plantations, gooseberry bush, the varieties studied (Donetski krupnoplodni, Donetski pervenets, Şcedri, Kolobok) when planting stuff, greater planting distance 2.5 x0, 75 m corresponding ranged between 19 0.9 to 8, 4000 m2/ha, from 16.0 to 7.3 t / ha, and planting with increasing distance values of these indicators fall between 17.8 to 6.8 thousand m2/ha, 11.0 -4.5 t / ha. Established between leaf area ratio, and average harvest is reversed, however, planting distance increases from 1.0 to 1.68.

Key words: gooseberry, variety, coefficient, yield, foliar surface, planting distance.
Cuvinte cheie: agriş, soiuri, coieficient, suprafaţa foliară, recolta, distante de plantare.

1. Introduction

The main factor that determines the harvest is the process of photosynthesis, in which is formed up to 95% of the dry mass of organic crops [1].

By stomata, that can widen and narrow, and sometimes even completely close, the leaves assimilate carbon dioxide. Therefore all factors that cause stomata closure, primarily the shortage of water, retain the photosynthesis process [2].Leaf surface, the cornerstone of photosynthesis plantations of fruit trees, change considerably depending on the distance of planting, variety and fertilizer dose [4].

The largest leaf area in plantations has been established with the variety Doneţkii krupnoplodnâi - 19,900 m2/ha planting distance of 2.5 x 0.75 m and 16,300 m 2 / ha to 2.5 x 1 25 m. The varieties, which are larger leaf surface and yield, have increased. The surface of a plant leaf barberry varieties studied for planting stuff is less. Reducing the area of nutrition causes the reduction of individual leaf area, but the recalculation of a unit area of plantation, this indicator has increased along with increasing the number of plants per hectare, giving the maximum size of all studied varieties of barberry (Donetski krupnoplodni, Donetski pervenets, Kolobok, Şcedrîi) Planting distance 2.5 x 0.75 m [5].

2. Materials and methods

The investigations concerning the foliar surface and productivity of the gooseberry varieties on the new cultivate conditions were made on the propriety of the experimental field of the Institute of Researches in Horticulture over the 2000 – 2002 years. There were studied 4 varieties in which entered: Donetski pervenets, Donetski krupnoplodni, Scedri and Kolobok, the plantation distances studied – 2.5 x 0.75m; 2.5 x 1.00m; 2.5 x 1.25m.

3. Results and discussions

Specialized bodies their performing the process of photosynthesis as leaves and which have great importance in the plant growth and fruiting. It is indisputable that protect them from diseases, pests, and other factors which may affect [3].

Strong and healthy leaf area can provide enough food plant with gooseberries to get a high quality fruit harvest increased (Fig. 1).

To assess leaf area, the basic physiological indicator of gooseberry plant productivity, the average number of leaves was studied in a bush, their surface compared with annual increases in the number of leaves and leaf surface, depending on variety and planting distance. The results are summarized in Table 1 and 2.

Based on data from the surface of the barberry leaf plantations varied depending on plant density. The plants are often located, as a shrub leaf area is small, but this indicator as calculated per hectare was higher. According to data presented in Table 1 the largest leaf area was recorded in Donetski krupnoplodni variety. In 2000, the 7th year after planting this variety has reached levels that ranged from 15.6 -12 900 m2/ha and harvest between 15.3 to 8.7 t / ha. In 2001, the same variety has been

established that maximum values of leaf surface ranged from 25.0 to 21.2 thousand m2/ha and harvest in the 8th year also was the highest ranging between 16.2 and 12.5 t / ha. In 2002 there was a variation lower than in 2001 from 19.0 to 14.9 thousand m2/ha and harvest between 16.5 to 8.0 t / ha mentioned indicators showed maxima – 25.0 m2/ha thousands at a planting distance of 2.5 in May stuffed x0, 75 m with a corresponding decrease in values up to 21,200 m2/ha a rare area of nutrition 2.5 x1.25 m. The same trends were observed in other species studied Donetski pervenets, Scedrîi, Kolobok which maximum leaf area ranged from 20 to 10 thousand m²/ha and harvest from 12.2 to 3.7 t / ha.

Leaf surface, the basic physiological indicator of plant productivity and harvest gooseberries are influenced by many factors. Variety with a leaf surface produces a corresponding high value crop increased. The results included in Table 2 allows us to say that according to the study of varieties of barberry located at different distances of planting and appreciate the relationship between leaf area and harvest index is an important characteristic for each variety.

Proceeding from data in Table 2, barberry plant leaf surface varied depending on plant density. The plants are often located (2.5 x0.75m), the leaf from a bush area is less, as calculated per hectare, however this indicator is higher. Variety Donetski krupnoplodni, which has higher leaf area values ranging from 19.9 to 16.3 thousand m2/ha and increased harvest fruits, calculated per hectare ranged from 16.0 to 9.7 t. Relationship between leaf area and harvest per hectare has a lower value (1.24) in May stuffed planting distance (2.5 x0.75m) and its value is increased up to 1.68 with increasing distance of planting. In other species the same trend is observed: Donetski pervenets foliar parameters having a surface between 16.2 to 12.8 thousand m²/ha appropriate harvest ranged from 16.1 to 9.5 t / ha, and the ratio of these indicators increased from 1.20 to 1.39; Şcedri having a leaf surface with parameters ranged from 11.8 to 7.8 9.8 to 5.6 thousand m²/ha corresponding yield t/ha, and the ratio of these indicators increased from 1.20 to 1.39; Kolobok having a leaf surface with parameters ranged from 7.3 to 4.5 8.4 to 6.8 thousand m²/ha corresponding yield t/ha, and the ratio of these indicators increased from 1.15 to 1.51.

4. Conclusions

So the investigations it was established that reducing surface causing reduced leaf area individualeşi nutrition of the crop, but the recalculation of a unit area of plantation this indicator increased while increasing the number of plants per hectare, giving maximum values all studied varieties of gooseberries on the distance of planting 2.5 x 0.75 m.

Foliar area and average yield in the plantations of barberry, the varieties studied (Donetski krupnoplodni, Donetski perveneţs, Şcedri, Kolobok) when planting stuff, is greater at a distance of planting 2.5 x0, 75 m ranged from 19 to properly 0.9 to 8, 4000 m²/ha, from 16.0 to 7.3 t/ha, and planting with increasing distance decreases accordingly from 17.8 to 6.8 thousand of these indicators m²/ha, 11.0 -4.5 t / ha. The report established between leaf area and average yield is reversed, however, planting distance increases from 1.0 to 1.68.

5. Reference

1.Овсяников, А. Физиологические и биологические основы плодоношения крыжовника. ВНИИС им. И. В. Мичурина, сб.н.р., вып. 21, Мичуринск, 1975, с. 187-192.

2.Максимов, М. Физиоложия плантелор, Кишинэу, 1959, п. 182.

3.Ромашко, Я. Как улучшить фотосинтез. Журн.Садоводство, 1969,№ 6,с.19.

4. Барбарош, М. Влияние сорта и доз удобрений на фотосинтетическую деятельность ягодных культур. Современные проблемы интенсификации плодоводства. Сб. Н. Тр., Кишинэу, 1987, с. 59-63.

5. Sava, Parascovia. Study of gooseberry plants foliage surfaceBuletinul Universităţii de ştiinţe agricole şi medicină veterinară Cluj-Napoca. Seria Horticultură, Cluj-Napoca, România. – 2005. – Vol.62.- P.104-106.

Tables and figures

Figure 1. Healthy gooseberry plant leaf surface

Table 1. Gooseberry plant leaf surface depending on variety and planting distances

Variety	Planting distance, m	Year 7		Year 8		Year 9	
		2000		2001		2002	
		S foliar, thousands m^2/ha	Harvest, t/ha	S foliar, thousands m^2 /ha	Harvest, t/ha	S foliar, thousands m^2 /ha	Harvest, t/ha
Donetski krupnoplodni	2.5x0.75	15.6	15.3	25.0	16.2	19.0	16.5
	2.5x1.00	14.1	13.3	24.1	13.1	15.1	8.8
	2.5x1.25	12.9	8.7	21.2	12.5	14.9	8.0
Donetski pervenets	2.5x0.75	14.7	-	20.2	16.4	13.7	15.8
	2.5x1.00	13.6	11.8	18.6	16.1	11.6	12.0
	2.5x1.25	13.1	9.4	16.7	12.1	9.8	7.0
Şcedri	2.5x0.75	20.3	12.2	15.1	10.4	8.6	6.9
	2.5x1.00	16.1	7.5	11.6	8.9	6.8	5.2
	2.5x1.25	12.9	6.6	10.4	5.8	6.1	4.5
Kolobok	2.5x0.75	10.6	6.7	12.6	8.9	5.5	6.4
	2.5x1.00	8.7	4.8	12.3	7.5	5.4	4.8
	2.5x1.25	8.5	3.7	10.1	5.8	4.7	4.1
LDS 05		**1.97**	**1.55**	**2.79**	**1.81**	**2.13**	**1.42**

Table 2. Relationship between leaf area and crop plantations gooseberry distances depending on variety and planting thousands m² /ha

Variety	Planting distance, m	S average foliar, thousands m^2	Average harvest,t/ha	S foliar/harvest, per hectare
Donetski krupnoplodni	2.5x0.75	19.9	16.0	1.24
	2.5x1.00	17.8	11.7	1.52
	2.5x1.25	16.3	9.7	1.68
Donetski pervenets	2.5x0.75	16.2	16.1	1.0
	2.5x1.00	14.0	13.3	1.05
	2.5x1.25	12.8	9.5	1.35
Şcedri	2.5x0.75	11.8	9.8	1.20
	2.5x1.00	9.2	7.2	1.28
	2.5x1.25	7.8	5.6	1.39
Kolobok	2.5x0.75	8.4	7.3	1.15
	2.5x1.00	7.6	5.7	1.33
	2.5x1.25	6.8	4.5	1.51
Average		**12.4**	**9.7**	**1.31**
Limit of deviation		**19.9-6.8**	**16.1-4.5**	**1.0-1.68**